## Summer Job-Answer the following questions using your word processer and Geogebra. You should remove the yellow highlighted words as you answer the questions.

**Common Core State Standards**

**MCC9‐12.A.REI.12** Graph the solutions to a linear inequality in two variables as a half‐plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half‐planes.

In order to raise money, you are planning to work during the summer babysitting and cleaning houses. You earn $10 per hour while babysitting and $20 per hour while cleaning houses. You need to earn at least $1000 during the summer.

1. Write an expression to represent the amount of money earned while babysitting. Be sure to choose a variable to represent the number of hours spent babysitting.

Did you write an expression? Yes or no

1. Write an expression to represent the amount of money earned while cleaning houses.
2. Did you write an expression? Yes or no
3. Write a mathematical model (inequality) representing the total amount of money earned over the summer from babysitting and cleaning houses. Did you write an expression? Yes or no
4. Use Geogebra to graph the mathematical model. Graph the hours babysitting on the *x*-axis and the hours cleaning houses on the *y*-axis. Insert your graph here. Did you paste your graph here?
5. Use the graph to answer the following:
   1. Why does the graph only fall in the 1st Quadrant?

Did you answer the question? yes or no

* 1. Is it acceptable to earn exactly $1000? Did you answer the question? yes or no
  2. What are some possible combinations of outcomes that equal exactly $1000? Did you answer the question? yes or no
  3. Where do all of the outcomes that total $1000 lie on the graph? Did you answer the question? yes or no
  4. Is it acceptable to earn more than $1000? Did you answer the question? yes or no
  5. What are some possible combinations of outcomes that total more than $1000? Did you answer the question? yes or no
  6. Where do all of these outcomes fall on the graph? Did you answer the question? yes or no
  7. Is it acceptable to work 10 hours babysitting and 10 hours cleaning houses? Did you answer the question? yes or no
  8. Why or why not? Did you answer the question? yes or no
  9. Where does the combination of 10 hours babysitting and 10 hours cleaning houses fall on the graph? Did you answer the question? yes or no
  10. Are combinations that fall in this area a solution to the mathematical model? Did you answer the question? yes or no
  11. Why or why not? Did you answer the question? yes or no

1. a. How would the model change if you could only earn more than $1000? Did you answer the question? yes or no

b.Write a new model to represent needing to earn more than $1000. Did you answer the question? yes or no

c. How would this change the graph of the model? Did you answer the question? yes or no

d. Would the line still be part of the solution? Did you answer the question? yes or no

e. How would you change the line to show this? Did you answer the question? yes or no

f. Use Geogebra to graph the new model. Insert your graph here.

You plan to use part of the money you earned from your summer job to buy jeans and shirts for school. Jeans cost $40 per pair and shirts are $20 each. You want to spend less than $400 of your money on these items.

1. Write a mathematical model representing the amount of money spent on jeans and shirts.

Did you answer the question? yes or no

1. Graph the mathematical model. Graph the number of jeans on the *x*-axis and shirts on the *y*-axis.
   1. Why does the graph only fall in the 1st Quadrant? Did you answer the question? yes or no
   2. Is it acceptable to spend less than $400? Did you answer the question? yes or no
   3. What are some possible combinations of outcomes that total less than $400? Did you answer the question? yes or no
   4. Where do all of these outcomes fall on the graph? Did you answer the question? yes or no
   5. Is it acceptable to spend exactly $400? Did you answer the question? yes or no
   6. How does the graph show this? Did you answer the question? yes or no
   7. Is it acceptable to spend more than $400? Did you answer the question? yes or no
   8. Where do all of the combinations that total more than $400 fall on the graph? Did you answer the question? yes or no

Summarize your knowledge of graphing inequalities in two variables by answering the following questions in sentence form:

1. Explain the difference between a solid line and a broken line when graphing inequalities. Did you answer the question? yes or no How can you determine from the model whether the line will be solid or broken? Did you answer the question? yes or no How can you look at the graph and know if the line is part of the solution? Did you answer the question? yes or no
2. How do you determine which area of the graph of an inequality to shade? Did you answer the question? yes or no What is special about the shaded area of an inequality? Did you answer the question? yes or no What is special about the area that is not shaded? Did you answer the question? yes or no